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COUNTRY ANALYSIS BRIEFS

# South Korea

Last Updated: May 2006

## Background

***After three consecutive years with real growth of less than 5.0 percent, South Korea's gross domestic product is forecast to rise by 5.9 percent in 2006.***

After posting real growth in gross domestic product (GDP) of 4.0 percent for 2005, South Korea's economic is forecast to rebound to 5.9 percent in 2006. Despite recovering from the brief recession in 2003, which was caused mainly by a tightening of requirements for consumer credit, the country's economic growth in 2004 and 2005 remained disappointing due to weak growth in demand for exports.


In response to the slow growth rate, the Bank of Korea has been pursuing an expansionary monetary policy since 2004, which is finally beginning to show a significant effect. Interest rate cuts curtailed the appreciation of the South Korean won against other currencies, which is intended to prevent an erosion of demand for South Korean exports. Due to this expansionary monetary policy, growth in domestic consumption has picked up, particularly since the second half of 2005. With signs of a rebound in economic growth, though, the South Korean central bank raised its discount rate by a quarter point in October 2005.

In the wake of the Asian financial crisis of 1997-98, South Korea began an economic reform program designed to address some of the conditions which made its economy vulnerable. Most importantly, the South Korean government has begun to break the hold of the chaebols (large, multi-industry conglomerates) over the financial sector. The lack of an "arms length" business relationship between borrowers and lenders had led to many South Korean financial institutions having a very large ratio of non-performing loans. While there is no intention of forcing the chaebols to divest their financial subsidiaries, the government has increased regulation to prevent chaebols from arbitrarily channeling money into other subsidiaries. Chaebols also have been pressed to spin off their non-core businesses and to rationalize their corporate structures.

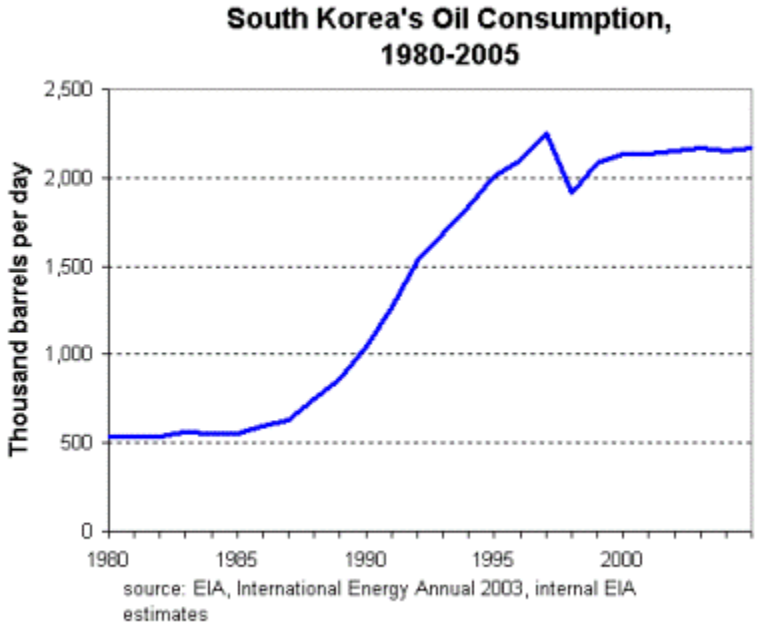
The South Korean government has plans to privatize several large state-owned enterprises (SOEs), including the state electricity utility, Korean Electric Power Corporation (KEPCO), and the

natural gas monopoly Korea Gas Company (KOGAS). The privatization program has moved at a slower pace than originally planned, due in part to strong opposition from labor unions to some of the privatizations and delays in passing implementing legislation. The South Korean government decided in June 2004 to limit the privatization of the electric power sector to generation facilities, retaining ownership over the transmission and distribution assets of KEPCO.

## Oil

***South Korea's oil consumption has been relatively flat since 2000.***

With no domestic oil reserves, South Korea must import all of its crude oil. Oil makes up the largest share of South Korea's total energy consumption, though its share has been declining gradually in recent years. Petroleum accounted for 52 percent of South Korea's primary energy consumption in 2003. In 2005, the country consumed around 2.17 million barrels a day (bbl/d) of oil, down from a high of 2.26 million bbl/d in 1997, all of which was imported. Demand has fluctuated very little since 2000. South Korea is the ninth largest oil consumer and fifth largest net oil importer in the world. Most of South Korea's oil imports come from the Persian Gulf region, with Saudi Arabia supplying about one-third of the country's import requirements in 2005.




South Korea's total reliance on oil imports has led to a policy of securing and diversifying the country's oil supply. South Korea has both a short-term and a long-term approach to fulfilling its oil needs. In the short-term, it has developed a strategic petroleum reserve, which is managed by the state-owned Korea National Oil Corporation (KNOC). Strategic stocks are roughly equivalent to a 90-day supply. The period of "import cover" was expanded from 60 days in early 2001, in part to meet the requirements for entry into the International Energy Agency (IEA). This reserve serves as a safety net against supply disruptions.

In the long term, KNOC is pursuing equity stakes in oil and gas exploration around the world. KNOC has 17 overseas exploration and production projects in 13 countries. This includes four producing fields in Yemen, Argentina, Peru, and the North Sea, five fields under development in Kazakhstan, Yemen, Venezuela, Libya, and Vietnam, and two newly-awarded exploration blocks offshore from Australia, which were acquired in May 2005. KNOC also is exploring domestic blocks offshore from South Korea. KNOC reported a new oil find in August 2001 at the Vung Tau site offshore from Vietnam, which began commercial production in 2003. Recoverable reserves at Vung Tau are estimated at 420 million barrels. The South Korean government has stated that it plans for KNOC to provide for 10 percent of the country's oil needs by 2008, a date which was recently moved forward from 2010. KNOC's output, however, was only covering 4 percent of South Korea's import requirements as of late 2005.

The South Korean refining industry was strongly affected by the country's economic crisis in

1997-1998, especially because it already suffered from significant overcapacity before the downturn in demand. In September 1998, South Korea's four downstream oil companies raised the retail price of gasoline and diesel oil following a government tax hike. In October 1998, the South Korean government, under financial pressure, decided to fully deregulate the refining industry, accelerating this decision from the original January 1999 deadline in order to attract badly needed foreign investment.

Several corporate consolidations and selloffs occurred as a result, and no new refineries have been built in a decade as a result of overcapacity. In September 1998, Hanwha's 270,000-bbl/d refinery in Inchon was taken over by Hyundai Oil Refinery Company, giving Hyundai the country's third largest refining capacity (after SK Corporation and LG-Caltex) with 580,000 bbl/d. In October 1999, Hyundai completed the sale of a 50 percent interest in its refining operation to the Abu Dhabi International Petroleum Investment Corporation, which was intended to reduce the company's highly leveraged debt-to-equity ratio. Ssangyong Group sold its 28.4 percent stake in Ssangyong Oil Refining Corporation to its majority shareholder, Saudi Aramco, in 2000. The firm's name was changed to S-Oil.

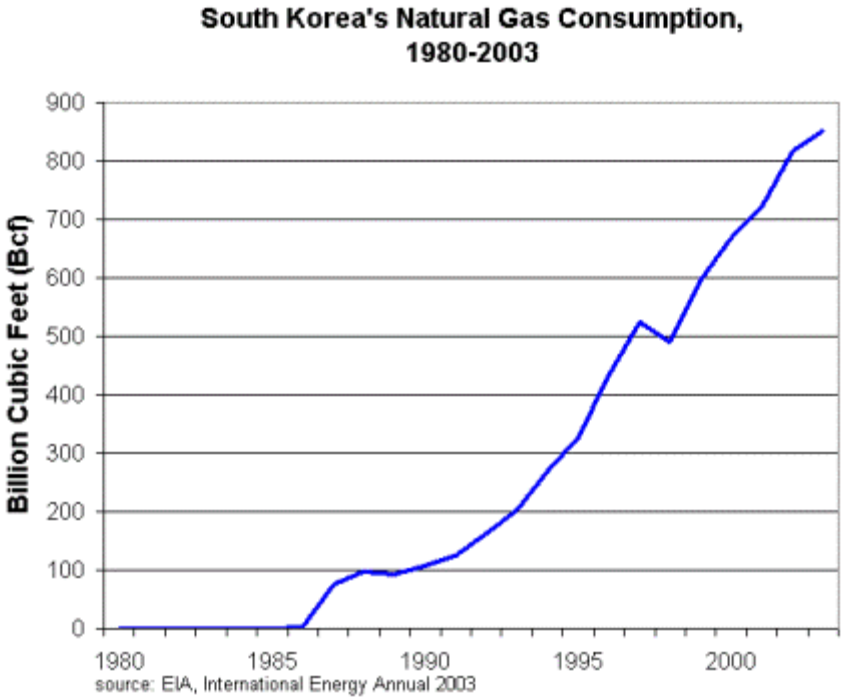
With refining capacity of roughly 500,000 bbl/d over domestic consumption, South Korea has no new refinery projects planned. Increased demand in China, however, has pulled South Korea's refinery utilization back up to 90 percent in the last two years, as refiners have begun to produce more for exports.

## Natural Gas

***Imports of liquefied natural gas (LNG) by South Korea grew by 17 percent in 2004.***

South Korea currently relies on imported liquefied natural gas (LNG) for most of its natural gas, though it began producing a small quantity of natural gas from one offshore field in early 2004. Imports of LNG began in 1986, after the founding of the state-owned monopoly LNG importer Korea Gas Company (Kogas). South Korea currently gets most of its LNG from Qatar, Indonesia, Malaysia, and Oman, with smaller volumes coming from Brunei and Australia, and occasional spot cargoes from elsewhere. The supplies from Qatar, which is now the largest exporter of LNG to South Korea, began in August 1999 under a contract with Qatar's new Ras Laffan LNG (RasGas) venture. The first shipment of Omani LNG was loaded in April 2000. In 2003, natural gas comprised around 11 percent of South Korea's primary energy consumption. South Korea is the second largest importer of LNG worldwide, importing 1,049 billion cubic feet (Bcf) of LNG in 2004. Imports of LNG grew by nearly 17 percent in 2004, continuing a pattern of rapid growth which has been interrupted only once, during the Asian financial crisis of 1997-98. South Korean natural gas demand is split almost evenly between the electricity sector and the residential heating sector, with a smaller amount consumed in petrochemical plants.

With demand surging, Kogas continues to sign contracts for additional supplies, though most of the new LNG term contracts in the past few years have included more flexibility for the purchaser in terms of the ability to lower volumes if necessary. Kogas' most recent supply agreement was signed in July 2005 with Sakhalin Energy, a joint venture with Russian companies backed by Shell, for supplies from the Sakhalin-2 project for 20 years beginning in 2008.




South Korea is increasing capacity at its existing terminals (Pyongtaek, Inchon, Tongyeong). Also, Mitsubishi Corporation of Japan and Pohang Iron and Steel Corporation recently completed an additional terminal at Kwangyang. Construction of the facility started in June 2002, and it began commercial operation in June 2005.

The South Korean government announced in 1999 that it intends to privatize Kogas. An initial public offering of 33 percent of Kogas equity was carried out in December 1999. Privatization plans initially stalled, however, due to questions about the structure of the companies which would result if Kogas were split for privatization, as well as opposition from labor unions representing Kogas employees. Legislation necessary to put the process in motion has not yet been passed by the South Korean legislature. While the South Korean government still officially backs eventual privatization of Kogas, the process is effectively stalled.

In addition to LNG imports, South Korea began producing a small amount of domestic natural gas in November 2003. KNOC's $320 million Donghae-1 development project is developing a natural gas deposit offshore from Ulchin in southeastern South Korea estimated to contain 240 Bcf of reserves. Donghae-1 is a relatively minor development, however, and will satisfy only about 2 percent of South Korea's natural gas demand.

Meanwhile, South Korea also is exploring the possibility of a natural gas pipeline from the Kovykta natural gas deposit in the Irkutsk region of Eastern Siberia. The pipeline would supply China as well as South Korea. The project as currently envisioned would supply about 1 Bcf/d to South Korea, and a larger volume to China. Officials from the two Koreas met in September 2001 to discuss the project, and Kogas completed a desk study of its feasibility. However, it now appears that the route will include a subsea section between China and South Korea, bypassing North Korea. No final decision or binding contract has been concluded for the project, which remains under negotiation.

## Coal

***South Korea imports the bulk of its coal requirements, due to lack of high-quality domestic coal reserves.***

Coal supplies about 22 percent of South Korea's total energy requirements. Most of this coal is imported, since the only indigenous coal resources consist of low-quality anthracite which was historically used in home heating and small boilers. Bituminous coal supplies (steam coal for power plants and industrial boilers and metallurgical coal for steelmaking) come mainly from Australia and China, with the United States also among the suppliers. State power company

KEPCO has invested in several Australian coal mines. Increased demand for coal in China since 2004 led to a drop in Chinese exports, which raised prices sharply for PacificBasin coal importers, including South Korea.

## Electricity

***Plans to privatize the state-owned electric utility have stalled.***

South Korea uses a combination of thermal (oil, natural gas, and coal), nuclear, and hydroelectric capacity to meet its demand for electric power. Total power generation capacity was 57 gigawatts (GW) as of the beginning of 2003. The South Korean government estimates that its electricity demand will rise at an average annual rate of around 4 percent per year through 2015.

In September 1998, KEPCO officially dedicated its Ulchin Number 3 nuclear reactor and launched the construction of Ulchin Nuclear Power Plants Numbers 5 and 6. Ulchin Number 3 has a generating capacity of 1 GW and is the first nuclear power plant built completely with South Korean technology from design to construction. The Number 4 Ulchin nuclear plant was completed in late 1999, Number 5 was completed in mid-2004, and Number 6 completed in mid-2005.

Although the South Korean government has not formally abandoned its goal of privatizing KEPCO, the process has essentially been shelved, after several years of delays. The South Korean government had previously unbundled KEPCO into separate generation, transmission, and distribution units. In early 2001, KEPCO split its power generation holdings into six separate subsidiaries, in a preliminary move to facilitate a split into competing companies. Five of the six operate thermal and hydroelectric facilities and are of roughly equal size in terms of installed generating capacity - between 7 and 8 GW. The sixth is comprised of all of KEPCO's nuclear plants, which will be kept together in one corporation under government ownership. The privatization plan generated much controversy, however, with labor unions fearing layoffs by new management and some politicians opposing foreign ownership.

While most of South Korea's generating capacity is still controlled by KEPCO, a few independent power producers (IPPs) exist. LG Power, owned by the LG Group conglomerate, operates a 540-megawatt (MW) independent power plant at Bugok near Asan Bay. The facility began operation in April 2001. LG Power purchased the existing Anyang and Puchon plants in June 2000, with a combined capacity of 950 MW, from KEPCO after a competitive tender. Tractebel is also investing in a new 519-MW IPP plant in Yulchon in partnership with Hyundai. In another significant development, South Korea's original IPP, Hanwha Energy was spun off from its chaebol parent company in June 2000, in a deal in which El Paso Energy acquired a 50 percent stake. Hanwha Energy operates a 1,800-MW plant at Inchon. In general, IPP project activity has been greatly slowed down by the uncertainty over the privatization of KEPCO, and no new major IPP projects have been announced since the beginning of 2005.

South Korea has ratified the Kyoto Protocol on greenhouse gas emissions, and while its status as a "non-Annex I state" means it has not undertaken to meet specific targets, its future plans emphasize the development of more nuclear power plants to reduce growth in carbon emissions. A dozen additional nuclear plants are planned before 2015, which would raise the nuclear share of power generation in South Korea substantially.

## Profile

### Country Overview

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|---|---|
| **Head of State** | President Roh Moo-Hyun |
| **Location** | Eastern Asia, southern half of the Korean Peninsula bordering the Sea of Japan and the Yellow Sea |
| **Independence** | 15 August 1945 (from Japan) |
| **Population (2005E)** | 48,422,644 |
| **Languages** | Korean, English widely taught in junior high and high school |
| **Religion** | no affiliation 46%, Christian 26%, Buddhist 26%, Confucianist 1%, other 1% |
| **Ethnic Group(s)** | homogeneous (except for about 20,000 Chinese) |

### Economic Overview

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|---|---|
| **Minister of Commerce,** | Hee-Beom Lee |

| | |
|---|---|
| **Energy, and Industry (MOCIE)** | |
| **Currency/Exchange Rate (5/1/2006)** | 1 US Dollar = 976.753 South-Korean Won |
| **Inflation Rate (2005E)** | 2.8% |
| **Gross Domestic Product (2005E)** | $788.5 billion |
| **Real GDP Growth Rate (2005E)** | 4.0% |
| **Unemployment Rate (5/2006E)** | 3.5% |
| **Exports (2005E)** | $289.0 billion |
| **Exports - Commodities** | semiconductors, wireless telecommunications equipment, motor vehicles, computers, steel, ships, petrochemicals |
| **Exports - Partners (2004E)** | China 22.4%, US 17.8%, Japan 8.3%, Hong Kong 4.8% |
| **Imports (2005E)** | $255.5 billion |
| **Imports - Commodities** | machinery, electronics and electronic equipment, oil, steel, transport equipment, organic chemicals, plastics |
| **Imports - Partners (2004E)** | Japan 21.6%, US 12.7%, China 12.3%, Saudi Arabia 5.1% |
| **Current Account Balance (2005E)** | $16.6 billion |

## Energy Overview

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|---|---|
| **Minister of Commerce, Energy, and Industry (MOCIE)** | Hee-Beom Lee |
| **Proven Oil Reserves (January 1, 2006E)** | None |
| **Oil Production (2005E)** | 0.1 thousand barrels per day, of which 0% was crude oil. |
| **Oil Consumption (2005E)** | 25 thousand barrels per day |
| **Crude Oil Distillation Capacity (2006E)** | 71 thousand barrels per day |
| **Proven Natural Gas Reserves (January 1, 2006E)** | 240 Bcf |
| **Natural Gas Production (2003E)** | None |
| **Natural Gas Consumption (2003E)** | None |
| **Recoverable Coal Reserves (2003E)** | 661.4 million short tons |
| **Coal Production (2003E)** | 33.1 million short tons |
| **Coal Consumption (2003E)** | 33.5 million short tons |
| **Electricity Installed Capacity (2003E)** | 9.5 gigawatts |
| **Electricity Production (2003E)** | 18.7 billion kilowatt hours |
| **Electricity Consumption (2003E)** | 17.4 billion kilowatt hours |
| **Total Energy Consumption (2003E)** | 0.9 quadrillion Btus*, of which Coal (82%), Hydroelectricity (12%), Oil (6%), Natural Gas (0%), Nuclear (0%), Other Renewables (0%) |
| **Total Per Capita Energy Consumption (2003E)** | 39.2 million Btus |
| **Energy Intensity (2003E)** | 28,651.6 Btu per $2000-PPP** |

## Environmental Overview

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|---|---|
| **Energy-Related Carbon Dioxide Emissions (2003E)** | 70.4 million metric tons, of which Coal (94%), Oil (6%), Natural Gas (0%) |
| **Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)** | 3.1 metric tons |
| **Carbon Dioxide Intensity (2003E)** | 2.3 Metric tons per thousand $2000-PPP** |
| **Environmental Issues** | air pollution in large cities; acid rain; water pollution from the discharge of sewage and industrial effluents; drift net fishing |
| **Major Environmental Agreements** | party to: Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling signed, but not ratified: none of the selected agreements |

## Oil and Gas Industry

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|---|---|
| **Organization** | Korea National Oil Corporation(KNOC); Daehan Oil Pipeline Corporation (DOPCO); Korea Electric Power Company (KEPCO); Korea Gas Corporation (KOGAS) |
| **Natural Gas Fields** | Donghae-I |
| **Major Ports** | Pusan, Inchon, Kunsan, Mokpo, Ulsan |
| **Major Refineries (capacity, bbl/d)** | Ulsan (817,000 bbl/d); Onsan (520,000 bbl/d); Yocheon (633,600 bbl/d); Daesan (310,000 bbl/d); Inchon (270,000 bbl/d) |

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

# Links

### EIA Links

EIA - Country Information on South Korea

### U.S. Government

CIA World Factbook - South Korea
U.S. Department of State, Country Commercial Guide - South Korea
U.S. Department of Energy - Office of Fossil Energy - South Korea
U.S. State Department Background Notes - South Korea
U.S. Consular Information Sheet - South Korea
U.S. Library of Congress Country Study - South Korea
U.S. Embassy in South Korea
State of Hawaii Country Profiles

### General Information

Korea National Oil Corporation (KNOC)
Korea Electric Power Corporation (KEPCO)
Korea Gas Corporation (KOGAS)
South Korea - Ministry of Foreign Affairs and Trade
South Korea - Ministry of Commerce, Industry, and Energy

# Sources

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Economist Intelligence Unit
FT Energy - Power in Asia
Global Insight Asia Economic Outlook
Korea Economic Weekly; Korea Herald

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U.S. Energy Information Administration
Petroleum Intelligence Weekly
Reuters News Wire
World Bank
World Gas Intelligence

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